

Amendments to the Claims

This listing of claims will replace all prior versions and listing of claims in this application.

Listing of claims:

Claims 1-12 (Cancelled)

13. (Previously Presented) A method for the preparation of heterogenised catalyst component comprising:

- a) providing a halogenated precursor component characterized by the formula:



- b) reacting the halogenated precursor with an ionic liquid precursor IL to prepare an ionic liquid of the formula;



- c) mixing in a solvent the ionic liquid IL^+X^- with a metallocene catalyst component of the formula:



wherein:

Cp and Cp' are independently a substituted or unsubstituted cyclopentadienyl group, M is a metal from Group 4 of the Periodic Table, R'' is a structural bridge imparting stereorrigidity between Cp and Cp' and Q is a halogen or an alkyl having from 1 to 12 carbon atoms

wherein the amounts of ionic liquid and catalyst component are in a molar ratio (ionic liquid)/(catalyst component) of from 5:1 to 1:5;

- d) heterogenising the ionic liquid/metallocene system of subparagraph c) by addition of an apolar solvent to induce the precipitation reaction; and
- e) retrieving a metallocene catalyst component heterogenised by said ionic liquid.

14. (Previously Presented) The method of claim 13 wherein the ionic liquid precursor is an N-hydrocarbyl imidazole or pyridine.

15. (Previously Presented) The method of claim 14 wherein the ionic liquid and the catalyst component are in approximately equal stoichiometric amounts.

16. (Previously Presented) The method of claim 14 wherein said ionic liquid precursor is an N-R imidazole in which R is an aryl group or an alkyl group having from 1-12 carbon atoms.

17. (Previously Presented) The method of claim 14 wherein the ionic liquid precursor is 1-methyl-3-pentylimidazolium bromide or N-pentyl pyridinium bromide.

18. (Previously Presented) The method of claim 13 further comprising prior to subparagraph c) reacting said ionic liquid with an ionic compound characterized by the formula C^+A^- wherein C^+ is a cation selected from the group consisting of K^+ , Na^+ , NH_4^+ , and A^- is an anion selected from the group consisting of PF_6^- , SbF_6^- , BF_4^- , $(CF_3-SO_2)N^-$, ClO_4^- , $CF_3-SO_3^-$, ClO_4^- , $CF_3SO_3^-$, NO_3^- or $CF_3CO_2^-$.

19. (Previously Presented) The method of claim 13 wherein the solvent of subparagraph c) is selected from a group consisting of tetrahydrofuran, methylene dichloride, and toluene.

20. (Previously Presented) The method of claim 19 wherein said apolar solvent is a liquid alkane.

21. (Previously Presented) The method of claim 20 wherein said apolar solvent is n-heptane.

22. (Previously Presented) The method of claim 19 further comprising subsequent to subparagraph c) and prior to subparagraph d) evaporating at least a portion of said solvent prior to the addition of said apolar solvent.

23. (Previously Presented) The method of claim 13 wherein the ligand structure of said metallocene catalyst component incorporates a substituted or unsubstituted bis-indenyl ligand structure, a substituted or unsubstituted bis-benzindenyl ligand structure, or a substituted or unsubstituted bis-tetrahydroindenyl ligand structure.

24. (Previously Presented) The method of claim 23 wherein said metallocene catalyst component is an ethylene bis-tetrahydroindenyl zirconium dichloride, dimethyl silyl bis (2-methylbenzindenyl zirconium dichloride, or dimethyl silyl (2-methyl-4-phenyl-indenyl zirconium dichloride).

25. (Previously Presented) A heterogenized metallocene catalyst component produced by the method of claim 13.

26. (Previously Presented) A heterogenized catalyst system comprising the catalyst component of claim 25 and an activating agent.

27. (Previously Presented) The catalyst system of claim 26 wherein the activating agent is methylaluminoxane and Q is a halogen.

28. (Previously Presented) The catalyst system of claim 27 wherein the methylaluminoxane is present in an amount to provide an Al/M ratio within the range of 100 to 1,000.

29. (Previously Presented) A method for the preparation of an alpha olefin polymer comprising:

- a) providing a heteroginized catalyst system comprising a heteroginized catalyst component produced by the process of claim 13 and an activating agent for said catalyst component;
- b) introducing said heterogenised catalyst system in an apolar solvent and an alpha olefin monomer into a polymerisation reactor;
- c) operating said reactor under polymerisation conditions; and
- d) recovering an alpha olefin polymer product from said reactor.

30. (Previously Presented) The method of claim 29 wherein said alpha olefin monomer comprises ethylene or propylene.

31. (Previously Presented) The method of claim 30 wherein said apolar solvent is n-heptane.

32. (Previously Presented) The method of claim 25 wherein said activating agent is methylalumoxane and wherein said ionic liquid precursor is 1-methyl-3-pentylimidazolium bromide or N-pentyl pyridinium bromide.